

CLAIMS

What is claimed is:

1. A method of treating wastewater to provide nitrification comprising:
 - 5 a) subjecting a first stream of influent having an ammonia concentration to a first BOD removal treatment process to yield a first effluent;
 - b) subjecting a second stream of influent to a second activated sludge process;
 - c) subjecting the first effluent to a second stage reactor capable of growing nitrifiers and nitrifying the first effluent to generate nitrifier-enriched effluent; and
 - 10 d) adding a portion of the nitrifier-enriched effluent to the second stream of influent to promote nitrification in the second activated sludge process.
2. The method of claim 1, wherein the second stage reactor is a membrane bioreactor.
3. The method of claim 2, wherein the membrane bioreactor operates at an SRT of not less than 10 days.
4. The method of claim 1, wherein a portion of the nitrifier-enriched effluent from the second stage reactor is directed to an aeration tank of the second activated sludge process.
5. The method of claim 1, further comprising directing effluent from a digester recycle stream to an inlet of the first BOD removal process.
- 20 6. The method of claim 1, wherein effluent from the second activated sludge process has an ammonia concentration of about 2 mg/L or less.
7. The method of claim 1, wherein the first BOD removal treatment process includes a process for removal of solids.
8. The method of claim 1, wherein the first BOD removal treatment process is an
- 25 activated sludge process.
9. The method of claim 1, wherein the ammonia concentration of the first stream is substantially unaffected by the first BOD removal process.

10. A wastewater treatment plant comprising:

- a) a first BOD removal treatment process receiving a first stream of wastewater influent and emitting an effluent;
- b) a second stream activated sludge process receiving a second stream of wastewater influent;
- c) a second stage nitrification reactor receiving the effluent from the first BOD removal treatment process, the second stage nitrification reactor operating at an SRT sufficient to provide essentially complete nitrification and to grow nitrifiers; and
- d) a conduit conveying effluent containing nitrifiers from the second stage nitrification reactor to the second activated sludge process to provide nitrification in the second activated sludge process.

11. The wastewater treatment plant of claim 10, wherein the second stage nitrification reactor is a membrane bioreactor.

12. The wastewater treatment plant of claim 11, wherein the membrane bioreactor operates at an SRT of not less than 10 days.

13. The wastewater treatment plant of claim 10, wherein the effluent containing nitrifiers from the second stage reactor is directed to an aeration tank of activated sludge process.

14. The wastewater treatment plant of claim 10, further comprising a digester recycle stream in liquid communication with the intake of the first activated sludge process.

15. The wastewater treatment plant of claim 10, wherein effluent from the second activated sludge process has an ammonia concentration of about 2 mg/L or less.

16. A method for modifying an activated sludge process configuration to enhance nitrification of ammonia, comprising:

- a) providing an existing wastewater treatment plant comprising a first activated sludge process and a second activated sludge process;
- b) providing a second stage reactor for nitrification and to grow nitrifiers in fluid communication with an effluent from the first activated sludge process; and

c) providing a means for directing at least a portion of the effluent from the second stage reactor to the second activated sludge process.

17. The method of claim 16, wherein the second stage reactor is a membrane bioreactor.